WHAT IS CLAIMED IS:

1. A method of generating an enhanced acoustic transmission signal, the method comprising:

generating a carrier signal;

receiving data and generating a data signal representing the data;

modulating the carrier signal with the data signal to form a modulated carrier signal at a carrier frequency;

generating a masking signal to mask the modulated carrier signal from being audible by a human ear;

receiving audio and generating an audio signal based on the audio, wherein a frequency band surrounding the carrier frequency is removed from the audio signal; and

combining the modulated carrier signal, the masking signal, and the audio signal to form the enhanced acoustic transmission signal.

2. The method according to claim 1, wherein the carrier signal is a sine wave.

3. The method according to claim 2, wherein the modulated carrier signal is a pulsed sine wave.

4. The method according to claim 1, wherein the masking signal is narrowband random noise.

5. The system according to claim 1, wherein the modulated carrier signal is at a level that is detectable by a decoding system while still being masked by the masking signal.

6. The system according to claim 1, wherein the masking signal has a bandwidth less than one critical band of the modulated carrier signal.

7. A method of decoding an enhanced acoustic transmission signal including a modulated carrier signal formed by modulating a carrier signal at a carrier frequency with a data signal representing data, a masking signal adapted to mask the modulated carrier signal from being audible by a human ear, and an audio signal modified so that a frequency band surrounding the carrier frequency is removed from the audio signal, the method comprising:

receiving the enhanced acoustic transmission signal;

filtering the enhanced acoustic transmission signal to isolate the modulated carrier signal from the masking signal and the audio signal of the enhanced acoustic transmission signal;

demodulating the modulated carrier signal to extract the data signal from the modulated carrier signal; and

decoding the data signal to extract the data.

8. The method according to claim 7, wherein the modulated carrier signal is isolated from the masking signal by using a finite impulse response (FIR) filter.

9. A system to generate an enhanced acoustic transmission signal, the system comprising:

a carrier signal generator to generate a carrier signal;

a data signal generator to receive data and to generate a data signal representing the data;

a signal modulator to modulate the carrier signal with the data signal to form a modulated carrier signal at a carrier frequency;

a masking signal generator to generate a masking signal to mask the modulated carrier signal from being audible by a human ear;

an audio input device to receive audio and to generate an audio signal based on the audio, wherein a frequency band surrounding the carrier frequency is removed from the audio signal; and

a signal adder to combine the modulated carrier signal, the masking signal, and the audio signal to form the enhanced acoustic transmission signal.

10. The system according to claim 9, wherein the carrier signal generator is a sine wave generator that generates a sine wave.

11. The system according to claim 10, wherein the modulated carrier signal is a pulsed sine wave.

12. The system according to claim 9, wherein the masking signal generator is a narrowband random noise generator to generate narrowband random noise.

13. The system according to claim 9, wherein the modulated carrier signal is at a level that is detectable by a decoding system while still being masked by the masking signal.

14. The system according to claim 9, wherein the system is a telephone system having a microphone connected to the audio input device to receive audio, and a data input device connected to the data signal generator to enter data into the system.

15. The system according to claim 9, wherein the masking signal has a bandwidth less than one critical band of the modulated carrier signal.

16. The system according to claim 9, wherein the modulated carrier signal and the masking signal are first combined to form a masked encoded signal, then the audio signal is combined with the masked encoded signal to form the enhanced acoustic transmission signal.

17. The system according to claim 9, wherein the modulated carrier signal, the masking signal, and the audio signal are combined simultaneously to form the enhanced acoustic transmission signal.

18. A system to decode an enhanced acoustic transmission signal including a modulated carrier signal formed by modulating a carrier signal at a carrier frequency with a data signal representing data, a masking signal adapted to mask the modulated carrier signal from being audible by a human ear, and an audio signal modified so that a frequency band surrounding the carrier frequency is removed from the audio signal, the system comprising:

a receiver to receive the enhanced acoustic transmission signal;

a filter to filter the enhanced acoustic transmission signal to isolate the modulated carrier signal from the masking signal and the audio signal of the enhanced acoustic transmission signal;

a demodulator to demodulate the modulated carrier signal to extract the data signal from the modulated carrier signal; and

a decoder to decode the data signal to extract the data.

19. The system according to claim 18, wherein the modulated carrier signal is isolated from the masking signal by using a finite impulse response (FIR) filter.

20. The system according to claim 18, wherein the system is a telephone system having a speaker to produce audio from the audio signal, and a display to show the data extracted from the modulated carrier signal.

21. A system to generate and receive an enhanced acoustic transmission signal, the system comprising:

a carrier signal generator to generate a carrier signal;

a data signal generator to receive data and to generate a data signal representing the data;

a signal modulator to modulate the carrier signal with the data signal to form a modulated carrier signal at a carrier frequency;

a masking signal generator to generate a masking signal to mask the modulated carrier signal from being audible by a human ear;

an audio input device to receive audio and to generate an audio signal based on the audio, wherein a frequency band surrounding the carrier frequency is removed from the audio signal;

a signal adder to combine the modulated carrier signal, the masking signal, and the audio signal to form the enhanced acoustic transmission signal;

a communication channel to receive and transmit the enhanced acoustic transmission signal;

a receiver to receive the enhanced acoustic transmission signal from the communication channel;

a filter to filter the enhanced acoustic transmission signal to isolate the modulated carrier signal from the masking signal and the audio signal of the enhanced acoustic transmission signal;

a demodulator to demodulate the modulated carrier signal to extract the data signal from the modulated carrier signal; and

a decoder to decode the data signal to extract the data.

22. The system according to claim 21, wherein the modulated carrier signal and the masking signal are first combined to form a masked encoded signal, then the audio signal is combined with the masked encoded signal to form the enhanced acoustic transmission signal.

23. The system according to claim 21, wherein the modulated carrier signal, the masking signal, and the audio signal are combined simultaneously to form the enhanced acoustic transmission signal.

24. The system according to claim 21, wherein the modulated carrier signal is isolated from the masking signal by using a finite impulse response (FIR) filter.

25. A method of generating and receiving an enhanced acoustic transmission signal, the method comprising:

generating a carrier signal;

receiving data and generating a data signal representing the data;

modulating the carrier signal with the data signal to form a modulated carrier signal at a carrier frequency;

generating a masking signal to mask the modulated carrier signal from being audible by a human ear;

receiving audio and generating an audio signal based on the audio, wherein a frequency band surrounding the carrier frequency is removed from the audio signal;

combining the modulated carrier signal, the masking signal, and the audio signal to form the enhanced acoustic transmission signal;

transmitting the enhanced acoustic transmission signal over a communication channel;

receiving the enhanced acoustic transmission signal from the communication channel;

filtering the enhanced acoustic transmission signal to isolate the modulated carrier signal from the masking signal and the audio signal of the enhanced acoustic transmission signal;

demodulating the modulated carrier signal to extract the data signal from the modulated carrier signal; and

decoding the data signal to extract the data.

26. The method according to claim 25, wherein the carrier signal is a sine wave.

27. The method according to claim 26, wherein the modulated carrier signal is a pulsed sine wave.

28. The method according to claim 25, wherein the masking signal is narrowband random noise.

29. The method according to claim 25, wherein the modulated carrier signal is isolated from the masking signal by using a finite impulse response (FIR) filter.